What is claimed is:

1. A method for identifying a chemical compound, the method comprising:

exposing said chemical compound to neutrons from a neutron source;

detecting gamma rays emitted by said chemical compound as a result of exposure to said neutrons;

creating a spectrum comprising an energy scale and a detection count, said energy scale corresponding to the energies of said gamma rays and said detection count corresponding to the number of detected gamma rays;

calibrating said energy scale of said spectrum;

performing an analysis on said spectrum to determine the presence of at least one chemical element within said chemical compound; and

identifying said chemical compound based on said analysis of said spectrum.

2. The method of claim 1 wherein said calibrating of said spectrum comprises:

providing a primary database of energies for at least one pre-selected chemical element;

analyzing said spectrum to locate peaks in said spectrum corresponding to gamma rays of said chemical element;

comparing said energies from said database to said peaks from said spectrum; and

performing a least-squares fit analysis of said peaks from said spectrum versus said energies from said database.

3. The method of claim 2, wherein said at least one pre-selected chemical element is chlorine.

4. The method of claim 3, wherein said database energies comprise values of about 5,088.88, 5,715.26, 7,413.80, and 7,790.10 keV.

5. The method of claim 2, wherein said at least one pre-selected chemical element is iron.

6. The method of claim 5, wherein said database energies comprise values of about 7,120.13, 7,134.45, 7,631.13, and 7,645.45 keV.

7. The method of claim 2, wherein said comparing comprises matching said energies from said database to corresponding peaks from said spectrum.

8. The method of claim 2 further comprising:

determining whether any of said energies from said primary database match said peaks from said spectrum; and

comparing said peaks from said spectrum to a secondary database of energies if said energies from said primary database do not match said peaks from said spectrum.

9. The method of claim 1 wherein said calibrating of said spectrum comprises:

providing a database of energies for at least one pre-selected chemical element;

organizing said energies from said database in a pre-selected order having a first energy and a last energy;

analyzing said spectrum to locate peaks corresponding to said pre-selected chemical element;

organizing said peaks from said spectrum in a pre-selected order having a first peak and a last peak;

comparing said energies from said database to said peaks from said spectrum by comparing said first energy through said last energy from said database to said first peak through said last peak from said spectrum; and

performing a least-squares fit analysis on said peaks from said spectrum versus said energies from said database.

10. An system for identifying a chemical compound, said apparatus comprising:

a neutron source for delivering neutrons into said chemical compound;

a gamma-ray detector for detecting gamma rays emitted by said detector;

a computer operatively associated with said gamma-ray detector; and

a computer-readable medium operatively associated with said computer, said computer-readable medium containing instructions for controlling said computer to identify said chemical compound by:

storing first data representative of gamma-ray peak energies corresponding to at least one pre-selected chemical element;

sorting said first data in a pre-selected order having a first peak energy and a last peak energy;

receiving second data representative of gamma-ray counts, wherein said gamma rays are generated by said chemical compound, and said second data has peaks associated therewith;

sorting said second data in a pre-selected order having a first peak and a last peak;

comparing said energies from said first data to said peaks from said second data by comparing said first peak energy through said last peak energy from

said first data to said first peak through said last peak from said second data;

performing a least-squares fit analysis of said peaks from said second data versus said energies from said first data;

analyzing said spectrum based on said least-squares fit analysis to determine at least one chemical element within said chemical compound; and

identifying said chemical compound based on said analyzing of said spectrum.

11. The system of claim 10, wherein said at least one pre-selected chemical element is chlorine.

12. The system of claim 11, wherein said energies from said first data comprise values of about 5,088.88, 5,715.26, 7,413.80, and 7,790.10 keV.

13. The system of claim 10, wherein said at least one pre-selected chemical element is iron.

14. The system of claim 13, wherein said energies from said first data comprise values of about 7,120.13, 7,134.45, 7,631.13, and 7,645.45 keV.

15. The system of claim 10 further comprising:

determining whether any of said peak energies from said first data match said peaks from said second data; and

comparing said peak energies from said first data to additional peak energies from an additional data source if said energies levels from said first data do not match said peaks from said second data.